AGENDA ITEM III C 1

PROPOSED ACADEMIC PROGRAM

SOUTHEASTERN LOUISIANA UNIVERSITY

B.S. IN ENGINEERING TECHNOLOGY

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BACKGROUND INFORMATION

The proposed B.S. program in Engineering Technology at Southeastern Louisiana University was assessed by a team of external consultants composed of: Anthony Gregory, Chair (and Team Chair), Department of Construction Science and Organizational Leadership, Purdue University-Calumet; Enrique Barbieri, Chair, Department of Engineering Technology, University of Houston; and Walter Boles, Chair, Department of Engineering Technology, Middle Tennessee State University. The review team conducted their on-site visit to the Southeastern campus on June 9-10, 2008, and submitted their final report June 20, 2008. This report was then sent to the University for its response which was received July 2008.

The staff summary which follows is divided into three sections, consistent with the organization and contents of the review team's report—Strengths, Weaknesses and Problematic Areas, and Final Recommendations. Direct quotes from the review team's report and the responses to this report from SLU are indicated.

SUMMARY OF REVIEW TEAM'S FINAL REPORT AND INSTITUTIONAL RESPONSE

STRENGTHS WHICH THE REVIEW TEAM IDENTIFIED, WITH RESPONSES FROM SOUTHEASTERN LOUISIANA UNIVERSITY

CURRICULUM IS WELL-DESIGNED

Report:

The proposed Engineering Technology program represents a broad, well-integrated knowledge of the discipline and is similar in content to other national programs....The proposed Engineering Technology program requirements are appropriate for a quality program and reflect similar programs in other states without duplication of programs in Louisiana....This proposed program reflects the need for more technical, engineering-oriented programs in the Northshore region.

PROGRAM NEED IS JUSTIFIED

Report:

There is evidence of intense regional need based on feedback from students, alumni, industry advisors, and data presented in the proposal. A compelling rationale based on the industrial

growth in the Northshore area as a result of hurricane Katrina was presented to the consultant team by industry leaders....The proposed Engineering Technology program covers the broad spectrum of disciplines including Mechanical Engineering Technology, Computer Engineering Technology, Industrial Engineering Technology, and Construction Engineering Technology. The consultant team views these programs as appropriate to address major needs in the region....
The written proposal demonstrated an ample supply of qualified students available in the area. Potential also exists to attract students from nearby areas due to the uniqueness of the program. [Given this prediction,] the consultant team believes the student enrollment projections are on the conservative side.

NEW FACULTY ARE WELL-QUALIFIED

Report:

The university administration has shown diligence in preparing for this new program by hiring new faculty. The faculty slated to teach the Engineering Technology courses are current in their fields and very qualified for teaching in the Engineering Technology program....The caliber of research and publication is good for the new faculty hired to teach in the program....The newly-hired faculty participate in professional service at the national level, some in leadership positions. The consultant team encourages continued/increased participation at the national level.

LIBRARY RESOURCES ARE SUFFICIENT

Report:

The proposal reports over 8,000 titles available for the program. The team believes the library holdings are adequate based upon data included in the proposal and discussions with the departmental library liaison...The proposal also indicates that the library holdings budget increased by $800,000 last year. This is evidence of continued growth in holdings. The library liaison in the department stated he will request increases in holdings for the proposed program.

[Staff note: This figure is quoted from the ERC Report.]

RECENT FACILITIES/EQUIPMENT PLANNING IS EXCITING

Report:

Space available for the proposed program is adequate and new equipment purchases are increasing for necessary equipment. There is a great deal of excitement about the new building and planned additional equipment purchases....The consultant team believes the commitment to a new building and additional equipment indicates strong support for the program in the future.

SUPPORT FROM OTHER ACADEMIC AREAS IS APPROPRIATE

Report:

The program has sufficient support from supporting areas of mathematics, science, and general

education courses.

RECENT UNIVERSITY FINANCIAL SUPPORT BODES WELL FOR THE FUTURE

Report:

It is clear that the University's administration is very committed to this proposed program and has diligently recruited additional faculty. Two additional faculty are planned for the construction area. Plans for a new building and additional equipment upgrades also bode well for program commitment and quality....[Still,] it is difficult to judge the numerical amount of financial support. The consultant team's impression is that there is sufficient financial support and administrative commitment to start and further develop a quality program.

GENERAL STRENGTHS

Report:

The proposed program is realistic. It is similar to other successful programs outside Louisiana.... The proposed program strengths include enthusiastic faculty, strong institutional support, regional and industrial need resulting from intense Northshore growth, and opportunity for industrial support....The consultant team was very impressed with the Department's faculty, facilities and institutional support. The consultant team feels that the proposal is strong.

WEAKNESSES AND PROBLEMATIC AREAS WHICH THE REVIEW COMMITTEE IDENTIFIED, WITH RESPONSES FROM SOUTHEASTERN LOUISIANA UNIVERSITY

CURRICULAR CHANGES ARE RECOMMENDED

Report:

The consultant team wishes to make the following curriculum related suggestions. The team does not believe that these comments should interfere with approval of the proposal. However, the team believes that consideration of these suggestions will reduce future curriculum revisions.

1. Computer Engineering Technology Concentration

    a. Second Year:

        ENGT 221 Programming for Technologists Course name listed incorrectly on curriculum check list

        ENGT 225 Electronics I Prerequisite course is in same semester

    b. Fourth Year:

ENGT 425 Control and Automation Prerequisite course (MA 201) not listed in program

Prerequisite of ENGT 410 rather than ENGT 213

c. These are general comments about the Computer Engineering Technology concentration that the faculty may want to revisit once the program is approved. These issues can be easily addressed after program approval.

I. English classes (such as 230) are normally taken in the 1st or 2nd year.
ii. ENGT 213 contains a great deal of material for a 2 hour lecture. Similar programs include a sequence of 2 electrical circuit classes
iii. Students interested in this major are typically savvy computer users from high school and other experiences. Faculty may consider revising the need for ENGT 202
iv. Other similar programs have revised the need for Engineering Drafting (Industrial Technology 111) and ENGT 241 (Intro. Engineering Materials).

v. Engineering Technology programs have experiential learning in strong laboratory settings as the backbone of their degree plans. Similar programs include at least 3 hours of lab instruction per week. Faculty may wish to revisit these observations:
vi. Computer Science 297 Digital Logic does not have a lab component
vii. ENGT 213 Electrical Circuits has only 2 hours of lab
viii. ENGT 225 Electronics I and ENGT 226 Electronics II each has only 1 hour of lab
ix. ENGT 320 Microprocessors and Interfacing has only 2 hours of lab

The items above when revisited may offer the faculty opportunities to introduce other courses that would strengthen the program.

2. Industrial Engineering Technology Concentration:

a. Third Year:

ENGT 353 Total Qual. Mgmt. Prerequisite course (IT 407) in later semester

3. Construction Engineering Technology Concentration:

a. Second Year:

ENGT 231 Surveying I Add prerequisite course of MATH 165

ENGT 234 Concrete and Masonry Design "Design" courses should have Statics and Strength of Material as prerequisite courses

b. Third Year:

ENGT 336 Steel Design "Design" courses should have Statics and Strength of materials as prerequisite courses

c. Fourth Year:

ENGT 441 Const. Plan. & Sched. Need prerequisite course ENGT 331 or 332

ENGT 444 Const. Reg. Contr. Spec. Should be 200 level course - add prerequisite course ENGT 132

4. Mechanical Engineering Technology Concentration:

a. Third Year:

ENGT 385 Mechanical Design "Design" courses should have Statics and Strength of Materials as prerequisite courses

5. Other Curricular Recommendations:

a. The consultant team recommends that ENGT 202 (Computer Applications) be offered within the first two semesters in all program concentrations. This will allow students to use the applications learned in the course throughout the curriculum.

b. The consultant team recommends that ENGT 213 (Electrical Circuits) not be listed in all concentrations. Based on the course description it appears to be appropriate for the Computer Engineering Technology concentration but not suitable for the other three concentrations.

c. There is no evidence of CAD courses in the Construction, Mechanical, and Industrial ET concentrations. The consultant team recommends the course Industrial Technology 215 be incorporated in these degree plans.

d. The consultant team recommends that ENGT 241 (Introduction to Engineering Materials) be deleted from the Construction Engineering Technology concentration as it is redundant with ENGT 132 (Construction Materials).

e. In the curriculum listing for the Construction Engineering

Technology concentration, ENGT 202 (Computer Applications) is listed twice – once in the third semester, and once in the fifth semester. Also, only two Technical Electives are listed (curriculum specifications call for three). It appears that the second listing of ENGT 202 should be replaced with a Technical Elective.

f. ENGT 205 title from "for engineering" to "for technologists" to be consistent with for example ENGT 221. The consultant team has some concerns about this course needing Mathematics 201 "Calculus II" as a pre-requisite.

g. ENGT 492 Project Management: add pre-requisite of Sr. Standing

h. ENGT 490 Seminar: topics could be easily incorporated in ENGT 493

Response:

We greatly appreciate the comments and suggestion from the review team, and fully concur with their recommendations. We feel that all of their suggestions are appropriate and will indeed help to strengthen the program, and allow for a more efficient implementation. We will add all of the suggested prerequisites, and will make the curricular changes that the team recommended.

Staff Comment:

The University has provided complete revised curricula for each program concentration and new descriptions for updated/change courses in an addendum to its response. This document, which is quite lengthy, has been examined by staff and judged appropriate. A copy of this material can be found in the Office of Academic Affairs.

PROGRAM./FACULTY/RESEARCH FOCUS SHOULD BE APPLIED ENGINEERING

Report:

As an engineering technology program, we recommend that the Department and faculty focus on engineering technology as applied engineering rather than engineering science.... The consultant team would like to stress that professors in engineering technology programs typically pursue applied research. Faculty interest in intellectual property, technology transfer, and entrepreneurship should be encouraged to facilitate economic development in the region.

Response:

The University did not directly respond to this issue.

ADDITIONAL FACULTY SUPPORT MAY BE NECESSARY IF PROGRAM GROWS

Report:

Based on conservative enrollment projections, the proposed growth in number of faculty may require more aggressive growth to match actual enrollment.

Response:

The University did not directly respond to this issue.

SOME FACULTY-RELATED ISSUES NEED TO BE ADDRESSED

Report:

Information [on the topic of the value of teaching for faculty promotion, etc.] was not provided in the proposal. The consultant team recommends the revised proposal address this issue.

Response:

Teaching is the primary goal of all faculty. For every department, Teaching Effectiveness must carry more weight than either Research or Service. The evaluation of teaching effectiveness is a very thorough process and involves the use of multiple measures. Quoting directly from the Faculty Handbook:

No one element should be used as the principal evaluation metric for gauging teaching effectiveness. Rather, multiple measures should be employed to capture the dynamic of teaching effectiveness. Evaluation of teaching shall be based on:

> *1. course syllabi and examinations*
> *2. evaluation of classroom instruction (visitation/observation by peers and/or department head)*
> *3. student opinion of teaching*
>
> *Evaluation of Teaching also may be based on*
> *1. individualized instruction of students outside the classroom*
> *2. course and curriculum development*
> *3. supervision of service learning, student research, internships, or field experiences.*
> *4. other documentation regarding teaching effectiveness"*

As further evidence of the importance of teaching, faculty research that involves the mentoring of an undergraduate student is given greater weighting than research that is done without students. Furthermore, tenure and promotion to the rank of Associate Professor cannot be achieved without a minimum rating of Distinction in Teaching Effectiveness, and if the faculty member has achieved Distinction in Research, then the rating for Teaching Effectiveness must be Excellence. A faculty member can only be promoted to Full Professor with a rating of Excellence in Teaching Effectiveness.

STUDENT ASSESSMENT OF TEACHING NOT ADDRESSED

Report:

Information [on the topic of students assessment of faculty teaching] was not provided in the proposal. The consultant team recommends the revised proposal address this issue.

Response:

Evaluation of Teaching Effectiveness also includes the student opinion of teaching, peer evaluations, and classroom observations. Just as evaluation of teaching has a direct impact on tenure and promotion, the quality of teaching also directly impacts merit raises. All raises must be tied to the annual evaluation, and since the evaluation of teaching effectiveness is the largest part of the overall evaluation, it has the greatest impact on faculty compensation.
Each semester students complete a Student Opinion of Teaching survey that is administered for every course. The Department of Computer Science and Industrial Technology traditionally has some of the highest average scores in the college. For the past two semesters the faculty received the 5.0/5.1 out of a possible 6.0

The other way that information is gained about the quality of advising and research mentoring is through the exit surveys completed by all graduates and also through the National Survey of Student Engagement (NSSE), that is administered regularly to students. In the table below are some data from this survey that compare the results from the Industrial Technology Majors to those of the rest of the College, to the University, and to national averages of SREB 4-Year 3 institutions and the entire NSSE pool. A rating of 1 indicates 'never' or 'very little' while a rating of 4 indicates 'very often' or 'very much.' Clearly based upon these results, the faculty in this department, and in the other departments in the college, are challenging the students, are very involved with their educational experience, and are teaching with a degree of rigor and sophistication that exceeds national norms.

Staff Note:

Rather than include this extensive chart, the staff observes that SLU faculty routinely score above the norm for similar types of institutions, College faculty above other SLU faculty, and major faculty above other faculty in the College.

FACULTY GUIDANCE EFFORTS NOT ADDRESSED

Report:

Information [on the topic of faculty guidance for potential student employment] was not provided in the proposal. The consultant team recommends the revised proposal address this issue.

Response:

The Department has a faculty member who is assigned the role of Tech Prep coordinator. This program has been used primarily for Industrial Technology Students, but of course, it will also be available to Engineering Technology students. This office provides a clearinghouse for job opportunities for our students, and they also organize a departmental career day. Our Industrial Technology program is well known for its excellent record of placing our students. We expect

the same to hold true for Engineering Technology. In effort to increase our contact with area business and industry, the College also has a full time Industrial Liaison, Mr. Dennis Herringshaw. The duties of the Liaison are to develop cooperative programming between our degree programs and industries, such as internships, as co-op program, summer employment for our students, and most importantly, employment for our graduates.

MINORITY/FEMALE STUDENT RECRUITMENT NEEDS TO BE ADDRESSED

Report:

Information [on the topic of minority/female student recruitment] was not included in the proposal. The consultant team recommends the revised proposal address this issue.

Response:

Recruitment of minority students has been a University priority for many years. There has been a steady increase in the numbers and percentages of minority enrollment. Over the last five years, minority enrollment at Southeastern has increased from 17.8% to 20.7%. This increase is not just in African American students, but also in Asian and Hispanic students.

Currently, the University has many minority recruiting efforts. Examples of this are:

- The Office of Admissions has an Admissions Counselor whose duties are specific to reaching out to minority students; this position has been part of the Admissions staff for a number of years; the individual in this position makes connections with minority students in an individualized fashion in an effort to build relationships with students that will facilitate their enrollment, persistence, and graduation
- Annual Minority Leadership Day: We invite area minority high school students to campus for leadership training; co-sponsored by Admissions and the Office of Multicultural Affairs; takes place each spring semester
- Campus visits: We bus in juniors and seniors from low-income/high-minority high schools; by providing the needed transportation, we facilitate connection with the university for students who cannot otherwise afford to visit our campus.
- Each fall semester we attend college fairs at high schools across the state, including those who serve primarily low-income and minority populations
- The Division of Enrollment Management works in collaboration with the Trio programs on campus to connect first-generation, low-income, and minority students with opportunities here at Southeastern
- The Dean of Enrollment Management will personally connect with groups and organizations that serve primarily low-income, first-generation, and minority populations, such as NAACP, churches, Big Brothers/Big Sisters, etc.
- We use multiple technological tools to track our progress and success in the recruitment and enrollment of minority students; this assessment provides timely feedback on the effectiveness of our efforts

The issue of recruitment of under-represented groups into the Engineering Technology program is an important concern, and is also a concern shared by other disciplines in the College of

Science and Technology. In particular, the minority enrollment in Physics, Pre-Engineering, and Industrial Technology are below the University percentage of minority enrollment, and the percentage of women enrolled in Physics, Pre-Engineering, Computer Science, and Industrial Technology is at 10% or lower. As the type of student that would be recruited into Engineering Technology is similar to the student that would choose one of these other majors, we would expect that without any action on our part, we would have a similar situation with Engineering Technology.

With that point in mind, the College and Department are planning to implement a number of initiatives that will hopefully not just address these concerns for the Engineering Technology degree, but for the other STEM disciplines in which minorities are underrepresented. The plans are to:

1. Work closely with the university recruiting office housed in the Office of Admissions to develop a recruiting plan and strategies that use currently established best practices for increasing women and minorities in STEM careers. Information on these best practices can be found from the National Academy of Engineering website, in particular, the site www.bestsworkforce.org.

2. Implement targeted strategies at the departmental level such as developing pre-college activities (summer science and engineering camps that target females and minorities), baccalaureate college bridge programs, and targeted freshman year learning activities.

3. Implement a seminar program that specifically invites woman and minority speakers.

4. Seek external funding to help support the previously mentioned recruiting activities and to help provide targeted scholarships.

5. Establish a subcommittee of our Advisory Board that specifically addresses the issue of recruiting women and minorities into the program and into their companies.

The Department is also working to increase diversity among faculty. Although recent hires in Engineering Technology were all men, this demographic was consistent with the applicant pool. In Computer Science, we have offered a tenure-track position to a female candidate, and we have hired an African American faculty member in the Occupational Safety degree program. Therefore, the department is actively pursuing faculty members from underrepresented groups, and this practice will continue with the Engineering Technology Program.

Currently, the department does not have any scholarships that are dedicated solely to women or minority students; however, there are many scholarships that are dedicated in a general sense for students in this department, so we will work with the development foundation to redirect some of the scholarships to target underrepresented groups.

STUDENT ACADEMIC SUPPORT UNCLEAR

Report:

Information [on the topic of student academic support and assessment] was not included in the proposal. The consultant team recommends the revised proposal address this issue.

Response:

This program itself does not specifically target academically disadvantaged students. However, on the university level, there are many mechanisms in place that have proven to be effective in improving student success. One of the most dramatic recent efforts has been the establishment of our Center for Students Excellence (CSE). The primary goal of the CSE is to advise freshman, inform them of the many support services that are available, and also to provide career counseling. The university offers free tutoring, and many courses include supplemental instruction.

The College of Science and Technology also has a very proactive process for working with students who are on academic probation. Every department has a faculty member who as a part of his or her workload serves as the Undergraduate Coordinator. One of the duties of the UG Coordinator is to track students who are experiencing difficulties and intervene. An example of this is how we work with students who are placed on probation. These student are only allowed to return if they take a restricted and reduced course load, and meet three times a semester with the UG Coordinator, and a staff member from the CSE. Students who continue to have difficulty work with the SE advisors to ensure that they have made an appropriate choice of major.

SURVEYING EQUIPMENT NEEDED

Report:

Future plans should include updating surveying equipment.

Staff Comment:

The University did not directly address this issue.

SUBJECT AREA COORDINATORS NEEDED

Report:

The consultant team recommends consideration of coordinators to assist the Department Chair.

Staff Comment:

See response below.

LABORATORY ASSISTANCE NECESSARY

Report:

Due to the added workload on faculty to maintain laboratory equipment, the consultant team strongly recommends hiring a technology coordinator or coordinators to assist in laboratory maintenance.

Response:

In response to this comment, we have already appointed a program coordinator. Starting in the Fall 2008, Dr. Junkun Ma will be assigned the role of program coordinator, and will receive a one-course reassignment every semester to work on the curriculum, scheduling, recruiting, and advising. As the number of students grows, the advising duties will be distributed among the faculty. In terms of a laboratory coordinator, currently one of the instructors, Mr. James Stutts, receives a two-course reassignment to work as a laboratory coordinator.

The College also has a full-time engineer (Mr. Jim Gerike), and is in the process of hiring a full-time Liaison to work with the Office of Technology. The Technology Liaison will be involved with overseeing the computer laboratories, and will work on assisting faculty on interfacing computers with equipment. A requirement of the liaison is that he or she have experience working with a variety of operating systems and platforms. When the new building is complete, the College will request support to hire a full time laboratory coordinator. At that point, there will be many more students enrolled in the program, we will have more faculty, and there will be more equipment and labs, so this position will be needed.

ACCREDITATION PREPARATION SHOULD BEGIN IMMEDIATELY

Report:

It is advantageous to begin embedded assessment methodologies to facilitate ABET, Inc. accreditation during initial course design. The consultant team recommends planning and executing the necessary assessment strategy in year one....The consultant team recommends that the department consider a “mock” accreditation visit after the first three years of the program’s existence.

Staff Comment:

The University did not directly address this issue.

INDUSTRIAL SUPPORT SHOULD BE SOUGHT

Report:

The strong support from regional industry offers a unique opportunity to solicit external program support. The consultant team recommends pursuit of external support for laboratory naming opportunities for the new building, for example.

Response:

The University did not directly address this issue.

CONCLUSION AND RECOMMENDATION OF THE REVIEW TEAM, WITH A RESPONSE FROM SOUTHEASTERN LOUISIANA UNIVERSITY

Report:

After reviewing a written proposal and attending a one-day site visit, the consultant team recommends that the Louisiana Board of Regents approve the proposed Bachelor's Degree in Engineering Technology at Southeastern Louisiana University (Southeastern). The consultant team believes the proposal is strong.

The proposed Engineering Technology program is aligned with Southeastern's vision and supports its strategic goals. The mission of Southeastern is to "lead the educational, economic, and cultural development of the southeast region of the state known as the Northshore. The university's educational programs are based on vital and evolving curricula that address emerging regional, national, and international priorities." Rapid growth in the Northshore region has created strong demand for this program. Southeastern is responding appropriately and aggressively to fulfill this demand.

The written proposal addressed all important issues. The site visit was conducted in a professional manner and the consultant team was impressed with the enthusiasm of Southeastern's administration and faculty.

There are no corrective modifications that we feel are required before program approval. We do include a number of recommendations and suggestions which we believe will reduce the number of future program revisions.

Response:

The faculty of the Computer Science Department & Industrial Technology would like to express their appreciation for the work and comments of the Board of Regents review team as well as their enthusiasm about our proposed program in Engineering Technology.

STAFF SUMMARY

As clearly expressed by the external consultants, Southeastern Louisiana University has submitted a quality proposal for a new B.S. program in Engineering Technology. Need for the program and its graduates is evident and the ability of the University to offer a program worthy of national accreditation is unquestioned. Immediate areas of concern identified by the consultants—curricular refinements, student academic support, faculty assessment, student assessment of teaching, faculty advisement, minority/female student recruitment, laboratory support, and assignment of a program coordinator---have all been addressed appropriately. Some long-term issues---applied focus in faculty research, possible future need for additional faculty, likely needs for equipment upgrades, preparation for eventual program accreditation, and a

industry support initiative---still await more definitive answers, but overall, it appears that the University is ready to begin program implementation.

As in the case of all such significant program development, the staff recommends conditional approval. While immediate needs/concerns appear to have resolved, long-term issues identified above will need to be periodically monitored to ensure appropriate and timely corrective actions.

STAFF RECOMMENDATION

The staff recommends that the Academic and Student Affairs Committee grant conditional approval for the proposed B.S. program in Engineering Technology (CIP Code 15.0000) at Southeastern Louisiana University, effective immediately. Beginning August 1, 2009, and on that date annually until the program has achieved accreditation from the Accreditation Board of Engineering and Technology (ABET), the University shall submit a progress report to the Associate Commissioner for Academic Affairs addressing the following:

1. ***Numbers of program enrollees and graduates;***
2. ***Placement of program graduates;***
3. ***Progress toward ABET accreditation; and***
4. ***Corrective actions to address long-term concerns identified by the external consultants/staff and identified in the summary above.***